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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/818,097	03/26/2001	Stepan Sokolov	SUN1P815/P5613	2836
22434	7590	02/12/2004	EXAMINER	
BEYER WEAVER & THOMAS LLP P.O. BOX 778 BERKELEY, CA 94704-0778			STEELMAN, MARY J	
			ART UNIT	PAPER NUMBER
			2122	4
DATE MAILED: 02/12/2004				

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/818,097

Applicant(s)

SOKOLOV ET AL.

Examiner

Mary J. Steelman

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 07/02/01, 01/13/04.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 March 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date #2, #3.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

### **DETAILED ACTION**

1. Claims 1-21 are pending.

#### ***Information Disclosure Statement***

2. IDS received 07/02/01 and 01/13/02 have been considered.

#### ***Drawings***

3. Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description:

Fig. 1 – drawing is missing #102.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

#### ***Specification***

5. Fill in the blanks on pages 1 & 10 of the Specification.
6. The use of the trademark JAVA has been noted in this application. It should be capitalized wherever it appears and be accompanied by the generic terminology.

Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort made to prevent their use in any manner which might adversely affect their validity as trademarks.

***Claim Rejections - 35 USC § 112***

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. The term "is likely to be used" in claims 3 & 20 is a relative term, which renders the claim indefinite. The term "is likely to be used" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

9. The term "appropriate information", used twice in claim 9 is a relative term, which renders the claim indefinite. The term "appropriate information" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

***Claim Rejections - 35 USC § 102***

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

11. Claims 1-12, 15, 17-21 are rejected under 35 U.S.C. 102(e) as being anticipated by US Patent 6,339,841 to Merrick et al.

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Per claims 1, 15 and 19:

-loading said class file into a memory portion of the computing system; (See Fig. 2. Class files are loaded into memory of server.)

-selecting information from said class file to be loaded into said virtual machine; (Col. 4, lines 33-37, "...the modified class loader will be asked to load x.class (step 1)...")

-loading said selected information from said memory portion into said virtual machine and not loading information not selected from the class file into the virtual machine. (Col. 4, lines 22-27, "...a load method invoker (modified class loader) to retrieve the method component that has not been loaded onto the client..." and col. 4, lines 64-65, "The method byte code is written to the location pointed at by the invoker...")

Per claims 2 and 15:

-encountering a request to a said class associated with a class file. (Col. 3, lines 5459, "...group the methods together if they were dependent on one another. This could be indicated in the class metadata where the 'compulsory methods' for downloading were referenced. The classloader would check for 'compulsory methods' in the metadata..." Also, col. 5, lines 16-17, "...one of the methods within the class was referenced then only the block of data representing this method is loaded...along with the other essential components of the class.")

Per claims 3, 4, 15, 20 and 21:

-selecting of information operates to select information from said class file that is likely / needed to be used by the virtual machine. (Col. 3, lines 57-59, "The class loader would check for

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'compulsory methods' in the metadata...and load those methods referenced." Also, col. 5, lines 16-17, "...one of the methods within the class was referenced then only the block of data representing this method is loaded...along with the other essential components of the class.")

Per claim 5:

- selecting of information operates to select information that includes information associated with at least one method of said class. Col. 5, lines 18-19, "...along with other essential components of the class.")

Per claim 6:

-loading of only said selected information operates to create an internal representation of the class file in the virtual machine. (See fig. 2. Client holds and internal representation of the class file.)

Per claims 7-9, 17, and 18:

-internal representation of said class file includes a method reference portion. (See fig. 2, #26. Col. 3, lines 62-64, "During the class loading the client receives the linear sequence of bytes codes (method code field) and reconstructs the class structure." Also, col. 4, line 10-12, "The method table comprises the names of the methods used by the class and links to the methods or method invokers for that method." The method invoker has signature field.)

Per claim 10:

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-memory is a heap memory of said computing system. (See fig. 2.)

Per claims 11, 12, and 15:

-determining whether an internal representation of the class file exists in the virtual machine;

-creating an internal representation of the class file in the virtual machine when said determining determines that an internal representation of the class file does not exist in the virtual machine.

(Col. 4, lines 22-27, "The present embodiment uses a load method invoker (modified class loader) to retrieve the method component that has not been loaded onto the client. The modified class loader can then search for the location of the method component in a method component directory or, as indicated in fig. 2, find the location in the method invoker itself.")

### *Claim Rejections - 35 USC § 103*

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claims 13, 14, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 6339841 to Merrick et al., in view of "EJVM: an economic JAVA run-time environment of embedded devices", by Da-Wei Chang and Ruei-Chuan Chang.

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Merrick disclosed a modified class loader that loaded only selected information into a virtual machine. Merrick failed to disclose information regarding removing class files from a memory portion.

However, Chang and Chang disclosed “removing said class file / on a Least Recently Used basis /from said memory portion” on pages 140-143. Garbage collection is a well known feature of virtual machines. Using the Least Recently Used policy for determining which code segments to remove is a reasonable technique. It is well known in the art as criteria for choosing selected information. Chang and Chang split class files and installed them into a cache. They benchmarked the LRU policy for various sized caches. See fig. 11, page 142.

Therefore, it would have been obvious, to one of ordinary skill in the art, at the time of the invention, to have modified Merrick’s invention to also address garbage collection policies, including LRU, because virtual machine efficiency can be enhanced by minimizing memory requirements, and selecting and clearing unused code is a well known technique.

### ***Conclusion***

14. The prior art made of record and not relied upon is considered pertinent to applicant’s disclosure.

Also note:

US Patent 6,202,208 to Holiday, Jr. – Modifying a loader environment of the JVM by altering the existing method body with a patch then loading. See Abstract, line 6, col. 7, line 51- col. 8, line 21 and figs. 3 & 4.



US Patent 6072953 to Cohen et al.- Extended class loader may apply any modification to classes.

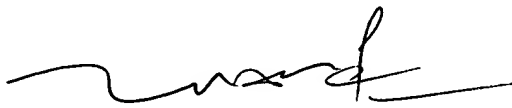
15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mary Steelman, whose telephone number is (703) 305-4564. The examiner can normally be reached Monday through Thursday, from 7:00 A.M. to 5:30 P.M. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tuan Dam can be reached on (703) 305-4552.

The fax phone number is (703) 872-9306 for regular communications for After Final communications. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

Mary Steelman



02/05/2004



**TUAN DAM**  
**SUPERVISORY PATENT EXAMINER**